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(54) Title: HOME ALARM DEVICE

(57) Abstract

Home alarm device, characterized in that the device comprises an air pressure sensor, a sound microphone, both being connected with a microprocessor, an alarm transmitter being connected with the microprocessor, where the microprocessor is programmed to select received signals from the pressure sensor and the microphone, thereby to recognize the received signals as to the amplitude level, the duration of the signals, the time delay between the two signals and the course of the signals, to be a situation preprogrammed in the microprocessor as having natural causes, such as weather condition or man made noise, or to be a house breaking, in a latter case the microprocessor activates the alarm transmitter as the microprocessor also does if the combination of signals received is not found among the preprogrammed situations.

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Home alarm device

The present invention is related to a burglar alarm device.

Home alarm devices reacting on sudden pressure variations in a house or a room have been known and are in use. Basis for such devices is that the air pressure in a house is change suddenly when a burglar is breaking in such as when a window or door is crushed. Monitoring the air pressure and warning when a sudden change in the air pressure occurs thereby should indicate that a window or a door is broken.

A long list of problems in connection with such devices, however, is the number of false alarms given as a result of the pressure sensor also registers sudden pressure changes caused by for example hard gust of wind on the house windowa as the case may be in storms.

With the sensitivity of such sensors, a pressure change may be registered corresponding to a broken window. To differ between gusts of wind and house breaking therefor has been difficult when only monitoring the air pressure.

It is the aim of the present invention to avoid false alarms of the above mentioned type, or at least minimize the number of such cases substantially. This is achieved with the home alarm device according to the present invention as described with the features stated in the claim.

The home alarm device according to the present invention comprises a pressure sensor and a microphone, both being connected with a micro processor. An alarm transmitter is connected to the micro processor, giving auditive or visual signals, or a combination thereof. The alarm transmitter furthermore also or exlusively can be connected with a remote monitoring central station.

The micro processor is such programmed that the received signals from the pressure sensor and the microphone are analyzed, compared with the time delay between the two types of signals, the amplitude of the signals, their duration and performance. The alarm unit is activated only if the combination

of these parameters indicates that there has been house braking, e.g. the combination of these parameters is not registered in the micro processor or if the combination is registered as being typical for the pressure change and sound caused by a housebreaking.

The micro processor is programmed with a number of combinations of signals from the microphone caused by sound and signals from the pressure sensor caused by air pressure change, the time difference between the peaks of the two signals, the peak levels and the course of the peak. Hereby the micro processor will compare all signals from the microphone and the pressure sensor with the stored combinations. Threshold values for pressure changes and for noise may preferably be set by the user, thereby adapting the programme in the micro processor to the specific place where the house alarm is installed.

A house alarm device according to the present invention is well suited for monitoring apartments, private houses as well as office buildings and even parked cars. The house alarm device also is well suited for monitoring buildings, such as outlaying houses, store houses etc., especially combined with a television monitoring.

The house alarm device according to the present invention easily can be connected to a remote alarm system, also in connection with or in addition to a remote television monitoring system.

Patent Claim

Home alarm device, CHARACTERIZED IN the device comprises an air pressure sensor, a sound microphone, both being connected with a micro processor, an alarm transmitter being connected with the micro processor, where the micro processor is programmed to select received signals from the pressure sensor and the microphone, thereby to recognize the received signals as to the amplitude level, the duration of the signals, the time delay between the two signals and the course of the signals, to be a situation preprogrammed in the micro processor as having natural causes, such as weather condition or man made noise, or to be a house breaking, in a latter case the micro processor activates the alarm transmitter as the micro processor also do if the combination of signals received is not found among the preprogrammed situations.

INTERNATIONAL SEARCH REPORT

International Application No PCT/NO 91/00123

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: G 08 B 13/16, 13/20

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
IPC5	G 08 B

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched[8]

SE,DK,FI,NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category *	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
Y	DE, A1, 3540675 (STRUCK, ALFRED) 21 May 1987, see column 1, line 3 - line 40 --	1
Y	GB, A, 2103406 (BEDFORD PRINTED CIRCUITS LIMITED) 16 February 1983, see page 1, line 6 - line 28; page 4, line 78 - line 103; abstract --	1
Y	US, A, 4853677 (A.E. YARBROUGH ET AL) 1 August 1989, see column 1, line 55 - column 2, line 11; abstract; claim 1 --	1
P,A	DE, A1, 3930389 (BERNAL TORANTRIEBE GMBH) 21 March 1991, see column 2, line 11 - line 57 --	1

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
14th January 1992	1992 -01- 15
International Searching Authority	**Signature of Authorized Officer**
SWEDISH PATENT OFFICE	Stefan Svahn

See notes on accompanying sheet

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	EP, A1, 0218765 (MICROPROTECTOR LIMITED) 22 April 1987, see abstract --	1
A	EP, A1, 0286897 (CERBERUS AG) 19 October 1988, see column 3, line 11 - line 31; abstract figure --	1
A	DE, A1, 3731593 (SCHAAF, NORBERT) 30 March 1989, see abstract --	1
A	GB, A, 2119984 (ELECTRONIQUE GUGLIEMETTI VG ELECTRONIQUE) 23 November 1983, see abstract --	1

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. PCT/NO 91/00123

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the Swedish Patent Office EDP file on 30/11/91
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A1- 3540675	87-05-21	NONE	
GB-A- 2103406	83-02-16	NONE	
US-A- 4853677	89-08-01	NONE	
DE-A1- 3930389	91-03-21	NONE	
EP-A1- 0218765	87-04-22	GB-A-B- 2157042	85-10-16
EP-A1- 0286897	88-10-19	NONE	
DE-A1- 3731593	89-03-30	NONE	
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